

ONS000515
PATENT

S.N. 10/729,892

REMARKS

Claims 1-11, 18, and 19 are in the present application.

Claim 1 is amended to more particularly point out and distinctly claim the subject matter of claim 1.

New claim 19 is added.

Claims 12-17 were previously cancelled.

Support for the amendment to claim 1 can be found at least on page 4, line 35 through the top of page 5, also on page 5, line 5 through page 6, line 13, and in FIGs. 2 and 3.

Support for claim 19 can be found at least in claim 1 as amended by the previous amendment and the method sequence described on page 5, line 5 through page 6, line 13.

The finality of the restriction requirement is noted.

Withdrawal of claim 18:

The final Office Action states that claim 18 is withdrawn because it is independent or distinct because it is drawn to the non-elected product. However, applicants respectfully submit that claim 18 is a semiconductor packaging method and that elected claims 1-11 are also a method of forming a semiconductor package. Thus, applicants respectfully submit that claim 18 and claims 1-11 are not distinct. Accordingly, it is respectfully submitted that the withdrawal of claim 18 should be rescinded.

New claim 19:

Applicants respectfully submit that new claim 19 is also directed to a method of forming a semiconductor package

ONS000515
PATENT

S.N. 10/729,892

and as such, should be included with the examination of claims 1-11 and 18.

35 USC 102 Rejection:

Claims 1-4, 6, and 9-11 were rejected under 35 U.S.C. 102 as being anticipated by United States patent No. 4,490,902 issued to Eytcheson et al ("Eytcheson"). This rejection is respectfully traversed. Amended claim 1 includes, among other things, - with a proximal end of the first lead attaching to the main panel at an intersection of the first lead and the main panel wherein the main panel is coterminous with the proximal end of the first lead and does not extend past the intersection toward the cavity section; and encapsulating the cavity section of the lead frame. At least this portion of amended claim 1 is not disclosed nor is it taught or suggested by Eytcheson.

Eytcheson clearly discloses exactly the opposite in column 4, lines 24-32, by disclosing that "dam bars 48 and 50 are partially cut from the lead frame before a package is molded to the lead frame". This is also shown in FIG. 4 where dam bars 48 are cut or sheared or severed along a line extending from the edge of 48b of the main panel along the side of leads 42a. This disclosed step of cutting the dam bar portions prior to encapsulation is also stated on page 4 of the final Office Action. Thus, the method disclosed by Eytcheson is exactly the opposite of amended claim 1.

In the first full paragraph of page 4 of the Final Office Action, there is a reference to "space, kerf, or gap" which is believed to be cited from column 5, line 55 through the top of page 6. It should be noted that the space, kerf, or gap that is referred to in column 5, line 55 through the top of page 6 is the amount of space between the sheared

ONS000515
PATENT

S.N. 10/729,892

portion of the dam bar and the side of the lead. It is respectfully submitted that the space, kerf, or gap is not the distance from the end of the main panel or end of the dam bar to the cavity section (see column 5, lines 65-66 stating "gap or kerf between portions 48a and 50b and their contiguous finger leads and side rails"). Accordingly, it is respectfully submitted that amended claim 1 is not anticipated by Eytcheson.

Claims 2-4, 6, and 9-11 depend from amended claim 1 and are believed to be allowable for least the same reasons as amended claim 1.

Additionally, claim 2 includes forming the first distance no greater than approximately fifty microns. Eytcheson discloses in column 5, lines 3-5, that the ends (48b) of the dam bars are coterminous with the mold cavity. This is exactly the opposite of claim 2 which specifies that the distance be no greater than fifty microns. Eytcheson is silent on such a distance between the cavity section and the main panel. Additionally, applicants teach on page 6, lines 2-9, the importance that distance 32 should be no greater than about 50 microns and preferably no greater than about 10 microns from the outer edge of cavity 16 in order to prevent encapsulation compound from escaping the mold cavity and attaching to leads 17-20 during the encapsulation process.

Further, claim 3 includes, - excising the third portion of the main panel away from the first lead includes leaving a fourth portion of the main panel attached to an end of at least one lead. Eytcheson does not disclose such a sequence of steps. Note that leads 42 are full formed prior to the encapsulation process as shown in FIG. 2 with leads 42

ONS000515
PATENT

S.N. 10/729,892

extending from near chip 44 past dam bars 48 all the way to the end of the leads at transverse bar portion 38, with dam bars 48 attached to a portion of the full length of leads 42.

Furthermore, claim 11 calls for, among other things, forming the leadframe devoid of a dam-bar between the main panel and the cavity section. Eytcheson clearly discloses the opposite by disclosing that dam bars 48 and 50 are provided between the cavity section and panel side rails 34 and 36 (See column 4, lines 15-24). Accordingly, it is respectfully submitted that Eytcheson is deficient in anticipating claim 11 in addition to claims 2-4, 6, and 9-11.

Applicants also respectfully submit that new claim 19 is not anticipated by Eytcheson. New claim 19 includes, among other things, a first lead of the plurality of leads extending no greater than the first distance from the cavity section toward the main panel and intersecting with the main panel to form an intersection without the main panel extending closer to the cavity section than the intersection; and encapsulating the cavity section of the leadframe to form a package body without the main panel extending closer to the cavity section than the intersection. At least this combination of steps is neither disclosed nor taught by Eytcheson.

ONS000515
PATENT

S.N. 10/729,892

Eytcheson discloses that a portion of the dam bar section of the main panel is separated from the leads along the sides of the leads before the lead frame is encapsulated. Thus, the intersection of the lead frame and the dam bar section of the main panel occurs at the end of the cut/shear which makes the dam bar section of the main panel extend past this intersection toward the cavity. Therefore, Eytcheson can neither disclose nor teach encapsulating a lead frame where the main panel does not extend closer to the cavity section than the intersection with the lead. Accordingly, it is respectfully submitted that Eytcheson neither anticipates nor makes obvious claim 19.

First 35 USC 103 Rejection:

Claim 7 was rejected under 35 U.S.C. 103 as being obvious over Eytcheson. This rejection is respectfully traversed.

First, it should be noted that claim 7 depends from amended claim 1 and is believed to be allowable for least the same reasons as amended claim 1.

Additionally, it should be noted that applicants teach on page 6, lines 2-9, the importance that distance 32 should be no greater than about 50 microns and preferably no greater than about 10 microns from the outer edge of cavity 16 in order to prevent encapsulation compound from escaping the mold cavity and attaching to leads 17-20 during the encapsulation process. Consequently, the importance of the first distance being no greater than about 50 microns is clearly explained in applicant's specification. Accordingly, it is respectfully submitted that claim 7 is not made obvious by Eytcheson.

ONS000515
PATENT

S.N. 10/729,892

Second 35 USC 103 Rejection:

Claims 5 and 8 were rejected under 35 U.S.C. 103 over Eytcheson and further in combination with United States patent No. 5,070,039 issued to Johnson et al ("Johnson") and United States patent publication No. 2003/0193080 of Cabahug et al ("Cabahug"). This rejection is respectfully traversed.

Claims 5 and 8 depend from amended claim 1 and include all the elements of amended claim 1. The deficiencies of Eytcheson relative to amended claim 1 are explained in the traversal of the 35 USC 102 rejection of amended claim 1 which is incorporated herein by reference. Combining Johnson and Cabahug with Eytcheson does not make up for these deficiencies of Eytcheson. Accordingly, it is respectfully submitted that claims 5 and 8 are not made obvious by the combined relied on references.

ONS000515
PATENT

S.N. 10/729,892

CONCLUSION

Applicant(s) made an earnest attempt to place this case in condition for allowance. In view of all of the above, it is believed that the claims are allowable, and that the case is now in condition for allowance, which action is earnestly solicited.

One independent claim is added resulting in three independent claims, ten dependent claims, and 13 total claims. Although it is believed that no fees are due for this amendment, the Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account 50-1086.

If there are matters which can be discussed by telephone to further the prosecution of this Application, the Examiner is invited to call the undersigned attorney at the Examiner's convenience.

Respectfully submitted,
Joseph K. Fauty et al., by

Robert F. Hightower

ON Semiconductor
Law Dept./MD A700
P.O. Box 62890
Phoenix, AZ 85082-2890

Robert F. Hightower
Attorney for Applicant(s)
Reg. No. 36163
Tel. (602) 244-5603

Customer #: 27255